TOC-PG3 TOC GAS GENERATOR
OPERATIONS & MAINTENANCE

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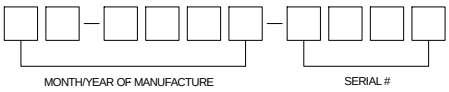
SECTION 1 GENERAL INFORMATION

1.1 SERIAL NUMBER CODING



1.2 DESCRIPTION OF OPERATION

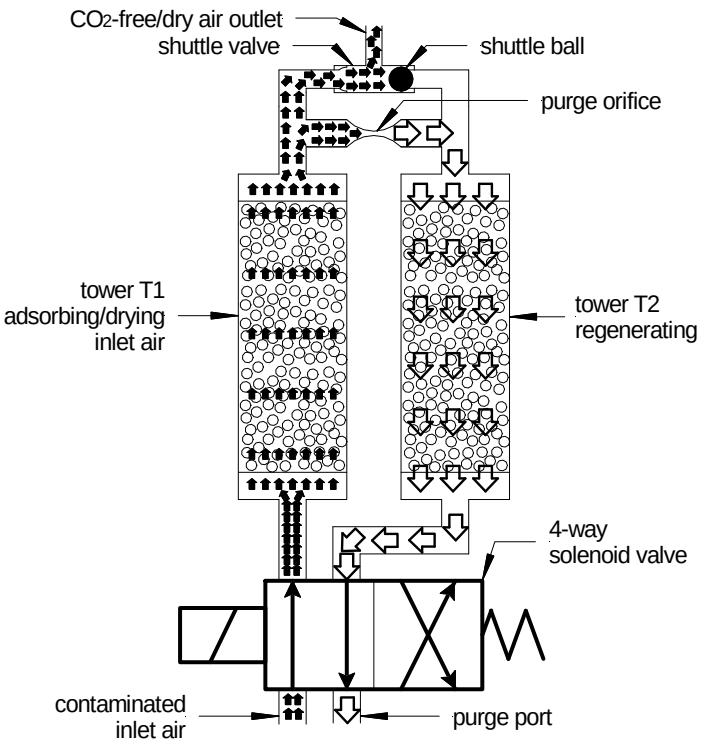
The TOC-PG3 TOC Gas Generator consists of three main components: a high-efficiency coalescing inlet filter, a CO_2 adsorber/dryer, and an outlet filter/regulator.

The coalescing inlet filter removes entrained particulate and oil contaminants prior to the adsorber/dryer.

The CO_2 adsorber/dryer uses the pressure swing adsorption (PSA) method of CO_2 removal and drying compressed air. This requires two identical towers containing beds of 13X molecular sieve beaded media.

Incoming compressed air enters the adsorber/dryer through the four-way solenoid valve, where it is directed to the bottom of the tower containing active 13X media (T1) as shown in Fig 1 to the right. The media in this tower removes CO_2 to less than 1 ppm and 99.9+% of the water vapor from the air when operated at standard catalog conditions. The dry, CO_2-free air leaving the top of the tower (T1) is directed to the outlet through a shuttle valve. The purge orifice allows a portion of the dry, CO_2-free air to flow into the other tower (T2) being regenerated. This cleaned purge air regenerates the desiccant by removing the accumulated CO_2 and water vapor and carrying it out the open purge port.

The 4-way solenoid valve is controlled by a solid state timer. After 30 seconds, the desiccant in tower T2 is regenerated, and the timer de-energizes the solenoid valve causing the process to instantly reverse, with tower T2 adsorbing and tower T1 regenerating. The following flow schematic demonstrates the adsorber/dryer operation.



(Fig 1)

TOC-PG3 4-WAY VALVE TIMING CYCLE

30 seconds energized
30 seconds de-energized

1 minutes total cycle time

SECTION 2 SAFETY INSTRUCTIONS

2.1 INSTALLATION SAFETY

Before starting or installing the TOC-PG3 TOC Gas Generator, be sure that all power to the unit is off, valves are shut, and the air circuit is at atmospheric pressure. DO NOT remove, repair, or replace any component, control filter, or part, while the unit is energized or the air circuit is under pressure. Unplug unit and de-pressurize the unit before starting installation or maintenance procedures.

The TOC-PG3 is rated NEMA 1.

2.2 OPERATION SAFETY

DO NOT OPERATE THE TOC GAS GENERATOR AT COMPRESSED AIR PRESSURES ABOVE 120 PSIG. UNIT FAILURE, INJURY AND EQUIPMENT DAMAGE COULD RESULT

CAUTION:

EXCEPT as otherwise specified by the manufacturer, this product is specifically designed for compressed air service and use with any other gas or liquid is a misapplication.
Manufacturer's warranties are void in the event of a misapplication and manufacturer assumes NO RESPONSIBILITY for any resulting loss.

Before using equipment with fluids or gases other than air, consult Puregas for written approval.

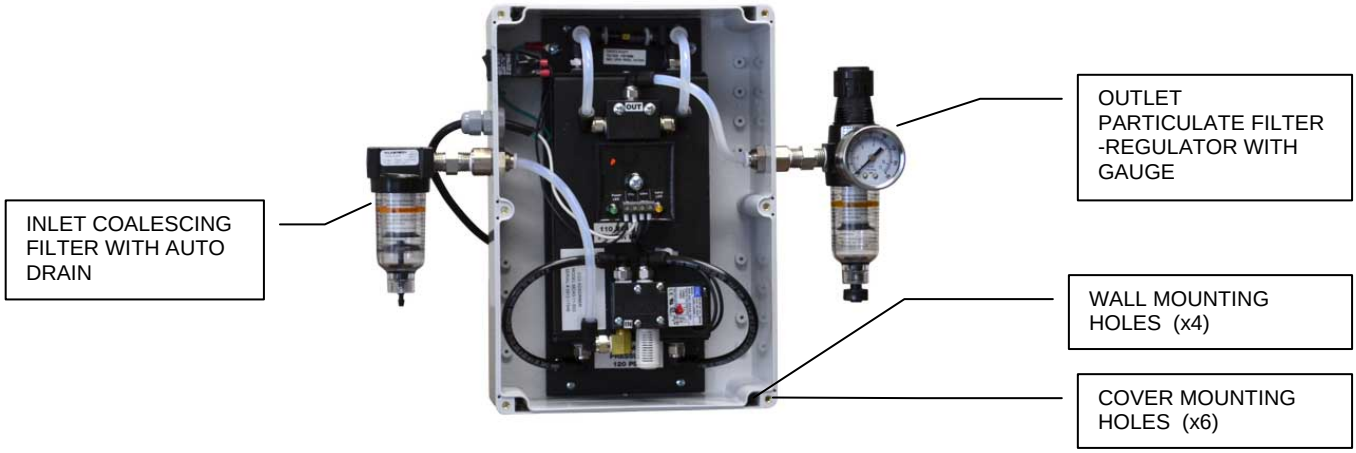
SECTION 3 SPECIFICATIONS

3.1 FLOWS, CONNECTIONS, DIMENSIONS, AND WEIGHT

MODEL NO.	TOC-PG3
Max Flow Capacities at 100 PSIG *(L/M)*	
Inlet Flow	13.2
Purge Flow	5.5
Outlet Flow	7.7
Connections *(NPT)*	
Inlet	1/4"
Outlet	1/4"
Dimensions *(Inches)*	
Height	10.5
Width	12.5
Depth	4.5
Weight *(Pounds)*	6.5

OUTLET FLOW CAPACITIES AT VARIOUS INLET PRESSURES	
PSIG	**lit/min**
120	9.1
110	8.4
100	7.7
90	6.2
80	4.6
70	3.3
60	2.1
50	1.2

Note: Inlet flows and outlet flows shown above are maximum capacities and should not be exceeded for best performance. No outlet flow metering valve or flow meter is installed on the adsorber/dryer and must be provided by the user. Purge flow is metered by an integral fixed purge orifice. Capacities are based on inlet conditions of 70°F, 100%RH, normal ambient CO_2 levels of approx 350-375 ppm. Outlet concentration of CO_2 will be less than 1 ppm and outlet dew point better than -100°F. If your flow, temperature or pressure are different from above, consult factory for performance.


INLET COALESCING FILTER WITH AUTO DRAIN
OUTLET PARTICULATE FILTER -REGULATOR WITH GAUGE
WALL MOUNTING HOLES (x4)
COVER MOUNTING HOLES (x6)

(Fig 2)

SECTION 4 INSTALLATION

4.1 PARTS INCLUDED

(1) TOC-PG3 TOC Gas Generator Assembly
(1) Operations & Maintenance Manual

4.2 LOCATION

DO NOT INSTALL THE UNIT IN AN ENVIRONMENT OF CORROSIVE CHEMICALS, EXPLOSIVE GASES, OR AREAS OF HIGH AMBIENT TEMPERATURE CONDITIONS.

INSTALL THE UNIT INDOORS.

4.3 ELECTRICAL CONNECTIONS

Before plugging in unit, check the unit nameplate for electrical characteristics. Standard electrical characteristics are 115 volt, 1 phase, 50/60 Hz.

IMPORTANT!: No overload protection is provided in the adsorber/dryer and unit should be plugged/wired into a protected circuit.

4.4 PIPING AND CONNECTIONS

Inlet and outlet tubing should be appropriate for pressure and temperature of operation. See specification chart for inlet/outlet NPT thread size. Teflon tape should be used in the makeup of joints to ensure a good, airtight fit of piping components. Check all connections for leakage using soap solution prior to putting unit into service.

4.5 FILTERS

A coalescing filter is provided at the inlet to the adsorber/dryer to remove entrained particulates, liquid moisture and oil which can cause damage to the desiccant beds. A particulate afterfilter is provided after the adsorber/dryer to remove any adsorbent media dust that may migrate from the desiccant beds.

SECTION 5 START UP

BEFORE UNIT START UP, FOLLOW THE INSTALLATION INSTRUCTIONS AND PROCEDURES COMPLETELY.

DO NOT REMOVE, REPAIR OR REPLACE ANY ITEM ON THE ADSORBER/DRYER WHILE THE ADSORBER/DRYER IS UNDER PRESSURE.

5.1 INITIAL START UPS

1. Confirm that all piping and electrical connections are proper.
2. Turn on the electrical power. Adsorber/dryer should start cycling with a small purge noise heard every 30 seconds.

SECTION 6 MAINTENANCE

DO NOT REMOVE, REPAIR, OR REPLACE ANY ITEM ON THE ADSORBER/DRYER WHILE THE ADSORBER/DRYER IS UNDER PRESSURE.

BEFORE BEGINNING ANY REPAIRS, MAINTENANCE, OR INSTALLATION WORK, VERIFY THAT THE POWER IS OFF AND THE ADSORBER/DRYER IS DEPRESSURIZED.

BEFORE WORKING ON THE ADSORBER/DRYER OR RELATED EQUIPMENT, ENSURE THAT ALL PERSONNEL HAVE READ AND UNDERSTAND THE SAFETY AND OPERATION INSTRUCTIONS IN THIS MANUAL.

6.1 PREVENTIVE MAINTENANCE

Below is a suggested schedule based on average operating conditions. As conditions such as dirty environment, humidity conditions, ambient temperature, etc. change, the frequency of the inspections may need to be increased.

Daily

1. Inspect the adsorber/dryer for proper cycling.
2. Inspect inlet filters for proper operation.
3. Verify proper inlet and ambient air conditions.

Semi-Annually

1. Inspect entire assembly for loose connections, screws, etc.

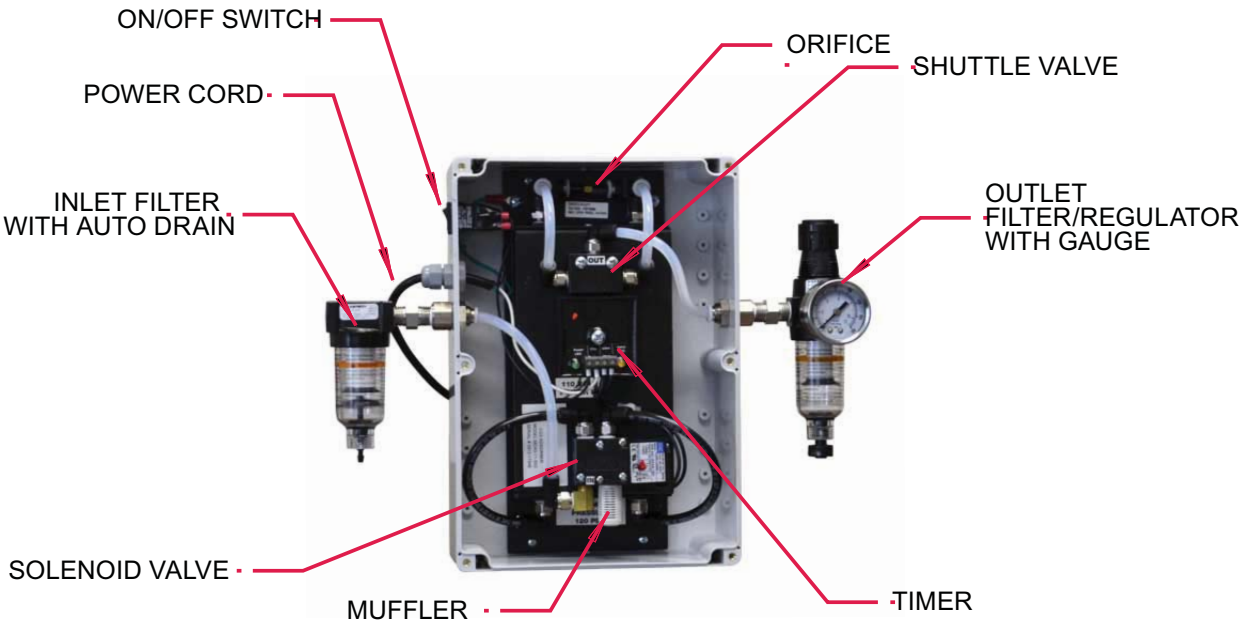
Annually

1. Replace inlet filter elements, outlet filter elements, and purge muffler:

Inlet Filter	Element
#M03-02-D00	#PS446
Outlet Filter/Regulator	Element
#B03-02-G000	#PS403
Purge Muffler	
#ASN-6	

SECTION 7 REPLACEMENT PARTS

Part Number	Description
51444	PURGE ORIFICE, .011 WITH TUBING
51443	SHUTTLE VALVE ASSY
B03-02-G000	OUTLET FILTER/REGULATOR WITH GAUGE
PS403	- OUTLET FILTER ELEMENT ONLY
P77413	- GAUGE ONLY
50027	TIMER, CYCLE, 115 VAC
ASN-6	MUFFLER, PURGE, 1/8 NPT
51441	SOLENOID VALVE ASSY, 115 VAC
M03-02-D00	INLET FILTER WITH AUTO DRAIN
PS446	- INLET FILTER ELEMENT ONLY
20020	POWER CORD



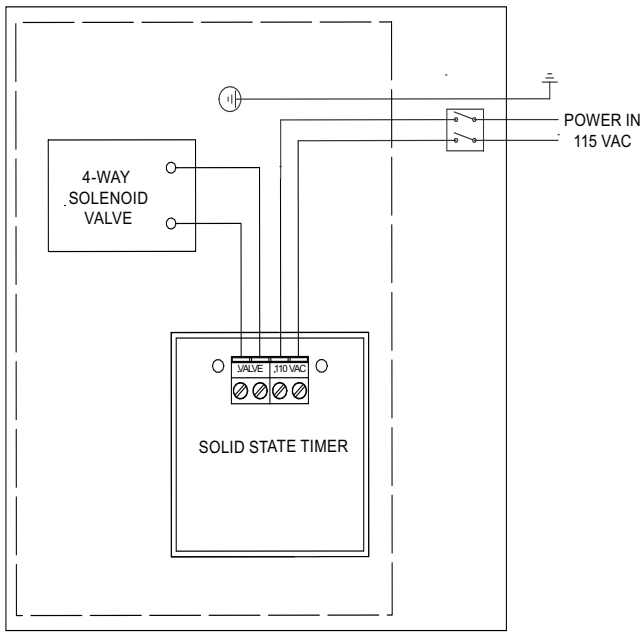
SECTION 8 TROUBLESHOOTING GUIDE

A	PROBLEM: UNIT DELIVERS HIGH CO_2/ WET AIR		
	POSSIBLE CAUSE	**CHECK**	**CORRECTIVE ACTION**
A1	No power to unit.	Power supply.	Correct power problem.
A2	High inlet air temperature.	For standard units, inlet air temperature should not exceed 100°F.	Reduce inlet air temperature to proper level. An aftercooler may need to be installed after compressor.
A3	Air flow through unit in excess of rated capacity.	Make sure outlet flow (total outlet flow used by applications) does not exceed rated outlet flow.	Reduce air usage downstream.
A4	Dirty or obstructed inlet air filter.	Check inlet coalescing filter element.	Replace inlet filter element.
A5	Purge orifice plugged.	Check purge air flow with flowmeter.	Replace purge orifice.
A6	Solenoid coil burned out.	Check coil leads with ohmmeter. Open (burned out) coil will have no reading.	Replace solenoid valve.
A7	Oil contamination of desiccant beds.	Verify particle/coalescing inlet filtration is adequate and functioning properly.	Towers must be replaced if contamination is suspected. Send unit to factory for repair.
A8	Timer not operating properly.	Verify correct timing cycle by listening to purge or by using voltmeter across coil connections on timer.	Replace timer.
A9	Purge flow restricted.	Check muffler for excessive back-pressure.	Replace muffler.

B	PROBLEM: RESTRICTED FLOW THROUGH UNIT		
	POSSIBLE CAUSE	**CHECK**	**CORRECTIVE ACTION**
B1	Improper operating conditions.	See A3 above.	
B2	Dirty or obstructed inlet air filter.	See A4 above.	
B3	Plugged air passages.	Check inlet and outlet air passages and piping for blockages.	Clear restrictions.

C	PROBLEM: EXCESSIVE PURGE		
	POSSIBLE CAUSE	**CHECK**	**CORRECTIVE ACTION**
C1	Inlet valve or outlet shuttle not shifting.	Check for damage or contamination of inlet valve and outlet shuttle valve.	Clean or replace as necessary.
C2	Timer not operating properly.	Incoming power may not be "clean". Fluctuations in voltage can occur in power circuits shared by inductive devices such as electric motors or welders.	Supply line voltage from another source or install power line filter.

SECTION 9 WIRING



TOC-PG3 WIRING

SECTION 10 WARRANTY

Puregas warrants the TOC-PG3 to be free of defects in materials and workmanship under proper use, installation and application. This limited warranty shall cover parts or replacement unit only, for a period of 18 months from date of shipment or 12 months from date of installation, whichever comes first.

ALL FREIGHT DAMAGE CLAIMS ARE NOT THE RESPONSIBILITY OF THE MANUFACTURER AND ARE NOT COVERED UNDER WARRANTY AS ALL PRODUCTS ARE SHIPPED F.O.B. SHIPPER. PLEASE DIRECT ALL FREIGHT CLAIMS TO THE FREIGHT CARRIER IN QUESTION.

This warranty does not apply to any unit damaged by accident, modification, misuse, negligence, or misapplication.

Any covered TOC-PG3 part or material found defective will be repaired, replaced or refunded, at Puregas's option, free of charge, provided that Puregas is notified within the above stated warranty period. All returns of defective parts/equipment must have prior written Returned Material Authorization (RMA). RMA may be obtained from our service department. All defective parts/equipment must be returned freight prepaid to the Puregas factory within 30 days of RMA issue date. Any shipment returned to the factory collect will be refused.

If an item is found to be warrantable, the repaired item or replacement will be shipped via standard ground freight prepaid within the continental US and Canada.

Any replacement part or material is warranted only to the extent of the remaining warranty period of the adsorber/dryer or to the extent as provided by the supplier, whichever is longer.

All freight damage claims should be filed within 15 working days and should be directed to the freight carrier.

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